UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7
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FEB 22 2011

Department of the Army
U. S. Army Corps of Engineers, Omaha District
ATTN: CENWO-PM-AC
1616 Capitol Avenue
Omaha, NE 68102

To Whom It May Concern:

RE: EPA Comments on the Draft Programmatic Environmental Impact Statement for the Mechanical Creation and Maintenance of Emergent Sandbar Habitat on the Riverine Sediments of the Upper Missouri River, CEQ # 20100482

The U.S. Environmental Protection Agency (EPA) has reviewed the U.S. Army Corps of Engineers' (Corps) referenced Draft Programmatic Environmental Impact Statement (PEIS) pursuant to our authorities under the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508) and Section 309 of the Clean Air Act. EPA Regions 7 and 8 have jointly reviewed the document and collaboratively developed these comments.

The Corps intends for the PEIS to be tiered from the Final Environmental Impact Statement and Record of Decision for the Master Water Control Manual Review and Update (2004) for the Missouri River and proposes to tier environmental assessments for future site-specific Emergent Sandbar Habitat (ESH) restoration projects from this PEIS. According to the language of the Draft PEIS, the action covered by this PEIS is the mechanical creation of ESH on the mainstem Missouri River within specific reaches below the Fort Peck, Garrison, Fort Randall and Gavins Point dams and an area near the headwaters of Lewis and Clark Lake. The Draft PEIS describes the preferred alternative, five other action alternatives and two 'no action' alternatives. The preferred alternative is characterized as being based on an adaptive management approach limited by a maximum amount of ESH. The remaining five action alternatives reflect differing habitat acreages based on the requirements of the U.S. Fish and Wildlife Service's 2003 Amendment to the Biological Opinion (2003 BiOp), past assessments of existing ESH, and recent piping plover and interior least tern population levels and reproductive response. The two 'no action' alternatives include continuation of the existing ESH program and a 'no build' alternative.

The impacts associated with all six action alternatives are largely described and compared according to the surface area requirements within each of the four river segments and Lewis and Clark Lake. The potential for adverse impacts is evaluated based on encroachment into

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available/low potential impact, restrictive/moderate potential impact and exclusion/high potential impact areas within each specific segment or lake location. The more acreage for ESH construction required within each alternative, the greater the encroachment into "sensitive areas" and the greater the potential for adverse impacts.

EPA is concerned that the Draft PEIS does not provide sufficient information to understand the relationship between the more narrowly defined actions described in the Draft PEIS and the broader ESH sub-program of the Missouri River Recovery Program (MRRP), as guided by the Adaptive Management (AM) strategy. The PEIS references the AM strategy, captured in Appendix H, as the mechanism by which it will implement the preferred alternative. The activities described within the AM strategy, however, appear broader than the stated purpose of the PEIS and more consistent with the ESH sub-program of the MRRP. A clear understanding of the scope of this PEIS is critical to comprehending its relationship to future individual ESH projects both within and outside the river reaches identified. This lack of clarity prevents us from fully assessing the potential environmental impacts resulting from implementation of actions governed by this PEIS as modified by the AM strategy. Based upon the narrow scope of this Draft PEIS and its assessment of environmental consequences, the impacts associated with vegetation removal, vegetation removal with subsequent overtopping or use of herbicides and geotextile tube placement would have to be fully characterized in individual EAs should they be employed either as pilot studies or widely used approaches. Appendix H, the AM plan, describes the construction of ESH within reservoirs and flow management as potential future management actions. While these actions may be necessary to achieve the ESH sub-program goals, they would also require additional NEPA documentation based upon the apparent narrow scope of this PEIS. Similarly, we affirm the AM plan's consideration that the drafting of a "New Plan" would require additional NEPA documentation.

EPA is also concerned that much of what is required for the PEIS to function as a standalone NEPA document is relegated to documents outside the main body of the Draft PEIS. Detail regarding the specific purpose and scope of the actions proposed in the Draft PEIS is either missing or unclear within the main body of the document.

Based on our review of the Draft PEIS, we have rated the preferred alternative as having Environmental Concerns based on insufficient information (EC-2) regarding the limits to the scope of the PEIS, its relationship to MRRP's ESH sub-program and the latitude provided by the AM strategy by which it will be implemented. Additional detailed comments are enclosed, as well as a "Summary of Rating Definitions and Follow-Up Actions."

We appreciate the importance of the work being performed by the Corps and its cooperating agencies in the recovery of the listed bird species on the Missouri River. We have provided analysis of the Draft PEIS and associated documents in the context of NEPA in order to clarify which restorative and recovery actions we believe would be covered by this PEIS and which would require additional assessment within future, individual EAs. Also, with respect to other matters of regulatory compliance, please be aware that EPA Region 7 issues Clean Water Act Section 401 certifications for individual projects for the Santee Sioux Nation of Nebraska if implemented within their reservation boundaries. EPA Region 8 issues these certifications for all

Missouri River tribes within Region 8 except for the Fort Peck (Assiniboine and Sioux) Tribes that issue 401 certifications for actions affecting their waters. Applications for National Pollutant Discharge Elimination System (NPDES) permits required for discharges to waters of the U.S. for the application of pesticides should be made to the appropriate EPA Regional Offices for projects within Indian Country and to the appropriate State environmental agency for all other locations.

Thank you for the opportunity to comment on the Draft PEIS and we look forward to continuing to work with you and your cooperating agencies to address the issues that we have identified. If you have any questions regarding these comments, please contact Joe Cothern, NEPA Team Leader, U.S. EPA Region 7, at (913) 551-7148 or cothern.joe@epa.gov, or Larry Svoboda, NEPA Program Director, U.S. EPA Region 8 at (303) 312-6004 or svoboda.larry@epa.gov.

Sincerely,

Ronald F Hammerschmidt, Ph.D.
Director
Environmental Services Division

Enclosures

cc: Hector Santiago, National Park Service, Omaha, NE
Henry Maddux, U.S. Fish & Wildlife Service, Lakewood, CO

Draft Environmental Impact Statement Rating Definitions

Environmental Impact of the Action

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative. EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

Adequacy of the Impact Statement

"Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

U.S. Environmental Protection Agency
Detailed Comments- Missouri River ESH Draft PEIS

General Comments

The relationship between the Master Water Control Manual (MWCM) EIS, the Programmatic Environmental Impact Statement (PEIS), site-specific Environmental Assessments (EA) and the Adaptive Management (AM) strategy within a NEPA context is not clear throughout the draft PEIS. The flexibility of the adaptive management approach requires clear delineation of NEPA coverage in tiering from the MWCM EIS to the ESH PEIS to individual site EAs. The flexibility provided by the AM strategy must be defined at each tiering stage to ensure that coverage under NEPA is adequate. The Final PEIS should clarify the relationship between the MCWM EIS, the PEIS, the individual EAs and the AM strategy.

A large portion of the foundation upon which the Corps describes the existing environment and assesses potential impacts is cited back to the MWCM EIS, the 2003 BiOP and support references or is found in the appendices. We recommend that the PEIS better describe, incorporate and integrate important components of these other information sources into the actual main body of the document. The strength of the PEIS as a standalone NEPA document is compromised by the volume of important information that is referenced without proper characterization in the document itself.

Project Purpose and Need

Clear distinctions must be made between the purposes and objectives of actions undertaken as part of this PEIS and the larger ESH sub-program. The preferred alternative is driven by an adaptive management approach described by the AM strategy (Appendix H) which applies at a scale beyond what has been described as the geographic scale of this PEIS. The AM strategy applies to a Missouri River system scale through the ESH sub-program within which actions undertaken as part of this PEIS are only a part.

The draft PEIS should more clearly describe any differences between the goals of the overall ESH sub-program and the purpose of the project specifically covered by this PEIS. In Chapter 4, page 4-1, second paragraph, the text identifies a direct linkage between the purpose and need identified in the draft PEIS and the "goal of the program" to "supplement naturally available habitat." This sub-program goal is significantly broader than the more limited "mechanical creation" of ESH which is addressed in this NEPA compliance document. Later language in this paragraph stipulates that the goal is defined by the mechanical creation of "sufficient quantities of ESH." The PEIS should more clearly identify the limits of Corps discretion under the AM strategy regarding mechanical approaches undertaken to create ESH. This clarity is essential for both the public and state and federal agencies to comprehend the limits to coverage provided by this document under NEPA. As the PEIS states on page 2-3, recovery of either bird species is outside the scope of the PEIS because the birds' ranges extend well beyond the geographic scope of this system. It appears unreasonable to identify "recovery" as the purpose of the projects that

stem from this PEIS. However, the currently worded ESH sub-program purpose in Section 2.1 uses the phrase "support tern and plover populations" to describe how the sub-program intends to address a problem or issue (i.e., need). This purpose statement is nonspecific and provides an immeasurable objective. Similar reliance on the phrase "sufficient quantities of ESH" throughout the document without specifically citing a specific biological target (e.g., fledge counts) is an inadequate basis around which to develop an adaptive management approach. We suggest that the PEIS purpose statement be made more specific and targeted, citing the biological goals and metrics driving both the PEIS and the ESH sub-program. This clarification in wording would assist the reader in understanding the purpose of the PEIS, the purpose of the ESH sub-program and how the AM strategy applies to each.

The PEIS states "This Programmatic Environmental Impact Statement (PEIS) is intended to provide NEPA coverage for the mechanical construction for the ESH program and is an independent regulatory action narrowly focused on compliance with an element of RPA IV(b)3 of the 2003 BiOp Amendment" (page 1-6). This statement effectively restricts the program's purpose and the PEIS' purpose statement should reflect this. Further, any future actions undertaken within the ESH sub-program as an alternative approach to mechanical creation of habitat, such as the widespread use of herbicides, as characterized in this PEIS or in other reaches of the river will have to be vetted through a separate and additional NEPA process. If, under the AM strategy, the Corps has the flexibility to "annually select and implement the most appropriate ESH manipulation methodologies or combination of methodologies (page 3-1)", which could include techniques other than mechanical creation of habitat, additional NEPA coverage would be necessary. We recommend that the Corps review the presumption that the PEIS covers a broad range of alternative approaches to habitat creation beyond mechanical methods (Section 3.2, Appendix C) as might be provided for in the AM strategy.

Section 2.2 describes the scope of the project and the effects analysis in a manner consistent with our understanding of the project purpose. Section 2.2 states

> *This draft PEIS describes the alternatives that the Corps is considering for programmatic implementation of the mechanical creation of ESH, as identified in Element RPA IV b (3), and estimates the beneficial and adverse environmental effects that would result from implementing such a program. The effects presented for each of the alternatives have been developed based on habitat creation and replacement assumptions developed specifically for the draft PEIS (see Appendix C, Emergent Sandbar Habitat Mechanical Creation and Replacement Assumptions).*

Given our past experience reviewing EAs for ESH creation preceding the PEIS, we are concerned that the latitude presumed in the PEIS and attributed to the AM strategy could extend beyond the compliance coverage provided by this PEIS. As discussed in Chapter 3, page 3-1, site-specific actions and impacts not fully articulated in the PEIS "would require separate compliance with NEPA." The draft PEIS blurs the distinction between actions that are covered by the PEIS and those which are ESH sub-program components not covered by this PEIS with the following statements in Section 3.2.

> *The assumptions for the creation of ESH for the establishment of this document rely exclusively on the use of dredge- and heavy equipment-created ESH (mechanical creation), as these methods are the only ones with data supporting successful nest and fledge production.* ***Other techniques for creating ESH are described in Appendix H (Adaptive Management Strategy) and would likely be pursued as pilot project*** *[Emphasis added].*

In that same paragraph, the PEIS states

> *The impacts associated with other potential techniques are assumed to be similar to or less than those disclosed for implementation of the program using mechanical creation and are covered within the range of impacts discussed in Chapter 6.*

There is no apparent documented basis for assuming that all methods of ESH creation and maintenance would have the same or lesser impact as assessed in this document.

The latitude and flexibility intended for the ESH sub-program clearly addresses created habitat acreage both system-wide and within each segment using a variety of mechanisms for creation, but the PEIS defines and potentially limits its NEPA coverage through its purpose statement which guides both the development of a range of alternatives and the assessment of project impacts. Although the AM strategy guides the implementation of both the ESH sub-program and this PEIS, actions undertaken as part of the PEIS are limited to mechanical creation and within the reaches of the river specified while the ESH sub-program would include a variety of approaches to comply with the biological objectives contained in the U.S. Fish and Wildlife Service's 2003 Amendment to the Biological Opinion (2003 BiOp) throughout the entire Missouri River system.

Alternatives

The preferred alternative is defined as implementing an adaptive management approach with a specific limit to the amount of acreage constructed. The draft PEIS states that should bird response dictate a need for additional acreage, further NEPA documentation would be developed. The preferred alternative, which provides an acreage target midway between Alternatives 3 and 4, lacks any specific ecological justification, but instead serves as an acreage target above which impacts associated with sediment demand or on 'sensitive resources' could become more significant. It would seem more beneficial to document impacts through Alternative 1 within this PEIS and allow for the AM strategy to direct implementation without further NEPA documentation specific to acreage amounts.

It is our understanding that the preferred alternative employs adaptive management only with regard to the final amount of habitat created, not in the creation approach employed or locations outside the specified reaches. Similarly, we expect the individual EAs tiering from the PEIS to also allow for segment-specific site selection for projects rather than changes to the identified

methods. Changes in habitat creation methods or projects outside the identified river reaches would also necessitate additional NEPA documentation.

Section 4.1 includes a reference to the MCWM EIS as addressing "specific alternatives that are beyond the Corps' jurisdiction." The PEIS should at least summarize that discussion and clarify why these alternatives were screened out of consideration in this PEIS.

Chapter 4 should thoroughly address the expected lack of project sustainability among all alternatives across all project segments. This is a critical aspect of the ESH sub-program and the PEIS which is not sufficiently addressed and evaluated. For all alternatives and among all segments, the amount of ESH constructed after one year becomes dominated by the replacement of lost habitat over construction of new habitat (Table 4-14). This aspect of both the mechanical creation of habitat under this PEIS and the larger ESH sub-program contributes to a determination of the "significance of environmental effects" in CEQ regulations at 40 CFR 1508.27. As described in Section 6, Environmental Consequences, "intensity refers to the magnitude of a proposed action such as the areal extent of disturbance **or the duration of activity needed to complete a project** [emphasis added]." Table 4-14 identifies the permanent commitment of federal resources to maintaining adequate ESH in the currently managed Missouri River system, but the text within the draft PEIS downplays this aspect of project significance.

Site Selection Criteria and Process

Within the main document, including Chapter 4, and in Appendix G, the description of the site selection process could be made clearer with regard to which river features are considered to be "restrictive areas." Similarly, it is not clear what exactly constitutes a "sensitive resource." Intuitively, it appears that "sensitive resources" are those river features which might be negatively affected by ESH construction activity (e.g., bald eagle nest sites, wetlands, mussel beds, water intakes). However, the document appears to also include those river features which, oppositely, might negatively affect ESH habitat performance or bird response (e.g., boat ramps, populated areas, the thalweg, established forest areas). The definition of "restrictive areas" appears to blend both of these features and this lack of distinction between areas affecting and affected by ESH confuses the document's description of this process. There also appears to be some descriptive overlap between "restrictive areas" and "exclusionary areas" and a lack of important clarity about those instances when both the 'construction footprint' and the 'dredging footprint' might be allowed to encroach upon these two areas. The document should provide greater clarity regarding the nature and definition of "sensitive resources", the distinction between "restrictive areas" and "exclusionary areas" and the basis for allowing intrusion into these areas for each site. This clarity in definition and the evaluation process is essential to an informed evaluation of alternatives which require more or less intrusion into the restrictive and exclusionary areas for each river segment. It is also significant to distinguish between truly sensitive resources and those other river features which should also be avoided because they affect the sustainability of the habitat. This is critical to the tiering process which the Corps intends to employ for site-specific EAs.

We also recommend that individual site evaluations include an estimate of the sediment load moving into and out of the immediate project vicinity along with an estimate of the amount of material needed for construction.

Environmental Consequences

The analysis of river sediment demand for sandbar creation compared annual sediment volume within each reach against the annual sediment volume required under each alternative. The draft PEIS distinguishes sandbar creation from sediment removal from the river as the placed material remains a component of on-going sediment transport. The draft PEIS evaluates the relative sediment demand of each alternative within each reach using a rating system based on the percentage of the annual sediment volume required for construction. The document repeatedly cautions that this comparison should not be confused with estimating change to sediment movement rates nor is it an indicator of annual sediment continuity. The importance of this distinction should be better explained. The document asserts that although mechanical creation of ESH should not have an impact on sediment transport or long term aggradational/degradational processes, it is possible that implementing project alternatives with larger acreage requirements could cause "sediment issues" and possible reductions in the sustainability of constructed habitat, particularly in three of the five river reaches. Although the comparison of the sediment demand across alternatives within each of the five reaches provides for a useful comparison of the alternatives (Table 6-2), the assessment of the significance of these potential impacts is ineffective and confusing. If, as the draft PEIS states, tributaries to this portion of the Missouri River do not contribute significant volumes of sediment material necessary to ESH formation or construction, the bulk of that sediment must come from the bed and the banks. The significance of these effects is not fully evaluated in the draft PEIS. Within Sections 5 and 6, the Corps' Biedenharn study (Biedenharn et al., 2001) is frequently cited and appears to be central to both the description of the affected environment and the environmental consequences of alternative actions. A detailed summary of this study, within the main body of the PEIS, would strengthen the document and give the public a more complete understanding of the basis for the Corps' position regarding the significance of potential impacts to reach geomorphology.

Appendix C includes a discussion of best management practices (BMPs) for herbicide application as has been practiced as part of past ESH projects. An understanding of the herbicide application methods, amounts, and specific location is necessary in order to fully evaluate impacts and, we anticipate, that much of the analysis on optimal BMPs and potential impact to the immediate riverine environment is best suited to individual EAs. However, neither Appendix C nor the draft PEIS in Section 6 include detailed information regarding the toxicity of the identified herbicides to all possibly affected organisms, such as algae, aquatic macrophytes, macroinvertebrates, fish, amphibians, reptiles, birds and mammals. Of particular concern, is the absence of information on potential reproductive toxicity to the listed birds and other organisms possibly using this habitat for reproduction. As the construction of ESH will attract not only the listed bird species, but also other species, the characterization of the toxicity and environmental

fate of selected herbicides is of critical importance. The sandy nature of the construction material will also affect the movement of applied herbicides. Potential impacts of herbicide use will vary depending upon which herbicides are used, how much is applied, the manner by which they are applied (e.g., by helicopter, ATV with sprayer or backpack sprayer) and whether the application is to prepare a site for overtopping or complete vegetation removal. Changes in the AM Strategy with regard to which herbicides are used and how herbicides are applied would have to be addressed in separate NEPA documentation. The PEIS should provide more detail in its impact assessment of herbicide application or more generally describe how the site-specific EAs will provide the necessary assessment. Also, please be aware that National Pollutant Discharge Elimination System (NPDES) permits are now required for pesticide application. The State environmental agencies within Montana, North Dakota, South Dakota and Nebraska are the permitting authorities for affected State waters. EPA is the permitting authority for waters of the U.S. within tribal lands located in Regions 7 and 8. Current information on EPA's general permit for discharges from the application of pesticides is available at www.epa.gov/npdes.

The draft PEIS only briefly describes a range of possible options for disposing of removed vegetation. Several of these options include introducing this removed vegetation into the river channel. There are many factors which could affect the significance of potential impacts associated with this practice, including the contamination of the vegetation with herbicides, the nature of the vegetation, the quantity of vegetation, flow conditions and the channel characteristics at the specific site. We suggest that the Corps evaluate and assess this practice, its potential impacts and regulatory requirements on a site-specific basis within each EA and reflect this in an expanded discussion in Section 6 of the PEIS.

Adaptive Management (Appendix H)

Relationship of AM Strategy to the ESH Sub-Program and the PEIS

Consistent with our comments on the draft PEIS and its purpose statement, we suggest that the Corps consider the breadth of purpose for the PEIS, the ESH sub-program within the Missouri River Recovery Program (MRRP) and the Adaptive Management (AM) strategy. Fundamentally, we believe these to be appropriately separate, but connected, endeavors. However, the text of the draft PEIS and the AM strategy (Appendix H) blends all three, confusing the reader and potentially affecting the clarity of program execution in the long term. Specifically, after reading the overview contained in Section 1.1 of Appendix H, it appears to us that the broad focus of the MRRP sub-program for ESH creation in compliance with the 2003 BiOp ought to be more clearly distinguished from the much more narrow focus and purpose of the PEIS, i.e., to create ESH using mechanical methods within the specific 4 river segments and the delta area of Lake Lewis and Clark. By our interpretation of the MRRP and this draft PEIS, the actions addressed in the PEIS constitute a sub-set of the total possible actions taken to accomplish the purpose of the ESH sub-program within the MRRP. It is appropriate that the AM strategy should include actions outside the scope of this PEIS. If this is the intent of the AM strategy, that should be made clear. The overview in Section 1.1 intertwines the PEIS with the AM strategy and the ESH sub-program of the MRRP in the first paragraph. The last sentence of

the first paragraph in Section 1.1 identifies the "primary management action of the ESH sub-program" as being the creation and maintenance of "nesting and foraging habitat on the Missouri River." If our understanding is accurate, such statements regarding the ESH sub-program should be more specifically linked to the 2003 BiOp just as scoping statements regarding the actions addressed by the PEIS should be more specifically linked to the specific element RPA within the BiOp governing mechanical creation of ESH. There should be much clearer delineation between the scope of actions and impacts covered by the PEIS and those which are outside the PEIS but within the ESH sub-program. We believe the AM strategy should be linked to the ESH sub-program and include the PEIS-specific actions as a component. It also important for the reader to understand the linkage between a "management action" such as habitat creation and "project purpose" which, we believe, is a detectable and positive biological response such as is measured by fledge ratio and population levels.

AM Objectives and Applicable Scale

Project scope and planning scale are critical to an understanding of the components of a system-wide implementation plan and how they interact. Biological Objective 1, which addresses bird fledge ratios, is calculated at three spatial scales. Sandbar and river segment scales are components important to the implementation of the PEIS and, possibly, other efforts to create habitat using other methods and in other reaches of the river system, e.g., reservoir or off-channel habitat creation. The AM strategy, in its description of Objective 1, explains that the sandbar scale analysis supports individual project site evaluation, such as natural versus constructed habitat and individual sandbar design. Segment scale analysis seems to best support habitat placement evaluations within each river reach. However, system scale analysis would be most appropriate within the AM strategy for the sub-program evaluations rather than for this PEIS. Again, clarification of the applicability of the AM strategy at the PEIS and the sub-program scales would improve this document and the AM strategy document. This should also be clarified within Objective 2 addressing bird populations.

Objective 3 uses habitat acreage targets as a measure of project success and these targets would reflect both mechanically created and naturally created habitat acreage. The draft PEIS range of alternatives and their projected impacts are defined by this objective. The preferred alternative establishes a maximum quantity of surface acreage and the AM strategy states that further analysis, presumably under NEPA, would be required if this acreage limit were to be exceeded. As a result of discussions with members of the Corps' Project Development Team, we understand that pursuing surface acreage beyond the preferred alternative maximum based on inadequate biological response under this PEIS would likely trigger a program reevaluation based on cost and approach effectiveness. The Corps should consider whether implementing an acreage maximum beyond the preferred alternative is appropriate for this PEIS.

AM Activities Outside of this PEIS

Within Section 1.2, addressing uncertainties, the AM strategy states that the population and productivity targets identified by Species Recovery Plans and the 2003 BiOp could be revised

based on data collected under this strategy. While we understand that the AM strategy should be able to adjust targets depending upon biological response to habitat creation efforts, we do not agree that these adjustments could be made without further NEPA compliance action. The NEPA compliance defined by this PEIS is specific in scope to mechanical creation and within the geographic locations identified in the document in order to address the requirements in a component of RPA IV(b)3. As the actual acreage necessary to comply with the biological targets varies with each alternative and is guided by the AM approach, any change to the biological target which defines project success and ESA compliance would require additional description under NEPA. This is clearly described as the objective for the larger ESH sub-program in the first paragraph of Section 2. However, we believe that the scope of the ESH sub-program and the purpose of the management actions identified in the PEIS are again confused in the next paragraph. Whereas we agree that "modifications to objectives" should be part of the iterative AM process, we do not agree that such modifications are adequately covered in this PEIS.

The lack of a clear distinction between the actions described by the PEIS, those of the larger ESH sub-program and a program-level AM strategy is further illustrated within the strategy's discussion of the goals and current scope of the ESH sub-program which appear to be inconsistent. The goal of the ESH sub-program is stated to provide sufficient habitat to support self-sustaining bird populations at the Missouri River system scale while the scope of this sub-program is constrained to accomplishing this goal only through methods of mechanical creation. As stated in this section, "Clear articulation of goals and objectives is the foundation of AM." The lack of clarity in the expression of project purpose and scope and the relationship between the management actions governed by the PEIS, the ESH sub-program and the AM strategy makes any determination of NEPA compliance of each and all of these components problematic.

The AM strategy states in Section 3.1 that source material for mechanical creation of ESH could come from outside the channel, e.g., floodplain wetlands. Although we agree that there is likely to be significant ecological benefits to the restoration of floodplain habitat and reconnection of this habitat to the main channel, the main body of the draft PEIS does not clearly identify this as a possible component of mechanical creation and does not assess the possible impacts of utilizing material from outside the main channel. The fluvial sediment found within the floodplain and outside the active channel could have a different chemical and physical nature than sediment actively transported by the river. If site-specific projects could use source material from the floodplain, the final PEIS should include an assessment of the impacts associated with using floodplain material for ESH construction both on the floodplain environment, but also on the in-channel environment. Otherwise, each site- or project-specific EA would have to fully characterize these impacts where source material is taken outside the channel environment.

As currently designed, the PEIS does not adequately address the impacts of deviating from mechanical creation of new ESH or maintenance of existing habitat as is included in the AM strategy (Sections 3.1 and 3.2). Impacts associated with vegetation removal, vegetation removal with subsequent overtopping or use of herbicides and geotextile tube placement would have to be fully characterized in individual EAs should they be employed either as pilot studies or widely

employed approaches. Potential future management actions for ESH construction approaches other than mechanical creation are listed in Section 3.3, including ESH construction within reservoirs and flow modifications. The AM strategy states that these approaches "may be explored opportunistically as part of ongoing operations." We have identified these approaches as appropriate to a more complete, integrated assessment of ESH creation and maintenance on the Missouri River as part of the ESH sub-program. However, given the narrow scope adopted by the Corps for this PEIS and its intended actions (i.e., mechanical creation of ESH in the 5 identified river reaches as per RPA IV(3)), these actions are not adequately covered by this PEIS and their employment would have to be assessed in an additional NEPA document.

The draft PEIS does not address the impacts of site removal as an approach to subsequently manage constructed ESH. Final disposition of the material when ESH is removed is a potentially significant action and would be expected to have impacts different from natural erosion by the river. We recognize that this is a yet untried approach to maintenance and management of ESH, but its implementation would have to be fully evaluated in either this PEIS or in individual EAs.

The implementation of the AM strategy is discussed in Section 4 and relies on the "AM learning wheel" to depict how the strategy would be adjusted based on monitoring and assessment of biological response or 'program success.' Section 4 identifies components of the ESH sub-program which could be altered based on measures of program success, including biological response. Section 4 also states that a failure to meet stated objectives could result in the development of a "New Plan." We envision modifications constituting a "New Plan" to possibly include the implementation of other approaches to habitat creation (construction and non-construction), ESH creation outside of the five areas/reaches identified in this PEIS and adjustments to biological metrics and acreage targets larger than those associated with Alternative 1. Although it states in Section 4.1 that the drafting of a "New Plan" "may involve the drafting of a new PEIS", we believe that such action would clearly require additional documentation in compliance with NEPA beyond this PEIS. Without discussion of "New Plan" practices in the Final PEIS, EPA would not be in agreement that AM principles applied at the scale of the entire sub-program and Missouri River system are within the scope of this PEIS and could be implemented without revisions to this document or coverage by separate, additional documentation.

Although the specific nature and scope of changes to the existing restoration approach would determine whether supplemental coverage under NEPA would be necessary, we believe that the current PEIS could, with modification, address impacts associated with the acreage components of all the alternatives. Modifications to the identified habitat creation methodology would be considered outside the scope of this PEIS. In addition, although the AM strategy should address components of bird population improvement or sustainability at sandbar, river segment and system scales, the PEIS covers the sandbar and river segment scale only.

Monitoring

We strongly support Priority 11 of the AM strategy's monitoring and investigations components

which identify preparation of a scope of work for the development of a sediment budget for the Missouri River. We believe the development of a sediment budget for the Missouri River system is critical to the sustainable management of the river, including, but not limited to, restoration and recovery efforts and continued permitting of commercial dredging actions in the lower river.

The AM Strategy, Appendix H, includes limited discussion on the monitoring which will be needed for the adaptive management plan. The discussion provided general information on the species parameters related to program needs. The AM Strategy identifies habitat quality as a monitoring priority and references Sherfy et al. 2007. We concur that the monitoring of overall habitat quality is important given this project's direct impacts on in-stream habitat and sediment distribution. The role of this reference is not clear. We recommend clarification of whether this reference is intended to be a roadmap for planned habitat monitoring. If this document is not a roadmap for monitoring habitat quality, we recommend the inclusion of additional information to describe what approach will be taken.

Similarly, there is recognition of impacts to water quality, bed and bank stability, geomorphology, and species other than those targeted by this project, including other species of concern, but there is limited specific information on the planned monitoring to determine impacts of the project. Water quality, geomorphology and the erosion and deposition of sediment are identified as monitoring priorities, but it is not clear what the monitoring efforts for these parameters will entail. We recommend the inclusion of additional information describing how monitoring will be conducted for these parameters. The movement of large amounts of sediment within the system could have localized impacts on water quality, including dissolved oxygen, nutrients and pH through the release of organic materials from the sediments and water column temperature through a decrease in channel depth. The creation of ESH could also impact bed/bank stability and river geomorphology by exposing new, previously unexposed sediments to new flow patterns within each reach. Understanding what information is available to characterize the existing condition with respect to the aforementioned parameters would be beneficial to implementation of the AM Strategy. We recommend including site-specific information within the individual EAs that will be issued for each restoration project.